CIVIL QUALITY CONSULTANTS & ENGINEERS

(Buildings Geo-Tech & Highway Materials Testing Laboratory)
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JAS-ANZ
ISO 9001:2000 CERTIFIED

Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 20.04.2016

GRADATION FOR GSB (CLOSE GRADED)
IS : 2720 (Part - 4)

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Asphalting of damaged Reaches in Shettyhalli and Mallasandra, in Shettyhalli Ward No.12, SSD, BBMP, Bangalore.

Reference : EE/DD/WO/444/2012-13 Dated 08.03.2013

Date of Testing : 20.04.2016

Sample Source : GSB, Mix plant Bangalore **Oven Dry Wt (gm) :** 25355

TABLE – 1

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	100	100
53.0	1875	1875	7.39	92.61	80-100
26.50	4860	6735	26.56	73.44	55-90
9.50	3785	10520	41.49	58.51	35-65
4.75	5060	15580	61.45	38.55	25-55
2.36	2845	18425	72.67	27.33	20-40
0.425	3265	21690	85.55	14.45	10-25
0.075	2040	23730	93.59	6.41	3-10
PAN	1625				
Total	25355				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

Note:

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2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory

ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರಮಣಿ ಮಾಲ್, ಬೆಂಗಳೂರು

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 **Date:** 26.04.2016

Aggregate Impact Value
IS: 2386 Part IV

Client	**Executive Engineer,** Dasarhalli Division, BBMP, Bangalore.
Agency	**Technical Manager (west),** KRIDL, Bangalore.
Name of the Work	Asphalting of road from WIMAC Junction to Abbigere in Shetthalli Ward No.12, BBMP, Bangalore.
Reference	EE/DD/WO/444/2012-13 Dated:08.03.2013
Type of Mix	Wet Mix macadam
Date of Testing	26.04.2016

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	380	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	90	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	288	292	290	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	23.81	23.16	23.48	23.48

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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→ Any Query regarding the report must be reported within 90 days from the date of testing.

Ravi.N.K. AE W-12 AE-12

For CIVIL QUALITY CONSULTANTS & ENGINEERS

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
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ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 26.04.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer**, Dasarhalli Division, BBMP, Bangalore.
Agency	**Technical Manager (west),** KRIDL, Bangalore.
Name of Work	Asphalting of damaged Reaches in Shettyhalli and Mallasandra, in Shettyhalli Ward No.12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/444/2012-13 Dated:08.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	26.04.2016

Result : Flakiness Index = **10.15%**

Elongation Index = **16.28%**

Result : Combined Flakiness & Elongation index **26.43%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Any Query regarding the report must be reported within 15 days from the date of testing.

Pavi.N.K. AE W-12 ME-12

For CIVIL QUALITY CONSULTANTS & ENGINEERS

ನಕಾರುವ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಪೆಣ್ಣಕ್ಕಿ ಉಪವಿಭಾಗ, ಮಾದನಾಯ್ಕ ದಳವು
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಮಲ್ಲೇಶ್ವರ, ಬೆಂಗಳೂರು

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 24.04.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer**, Dasarhalli Division, BBMP, Bangalore.
Agency	**Technical Manager (west),** KRIDL, Bangalore.
Name of Work	Asphalting of damaged Reaches in Shettyhalli and Mallasandra, in Shettyhalli Ward No.12, SSD, BBMP, Bangalore.
Reference	EE/DD/WO/444/2012-13 Dated:08.03.2013
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	24.04.2016

Result : Flakiness Index = **12.32%**

Elongation Index = **14.48%**

Result : Combined Flakiness & Elongation index **26.80%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Ravi. N. K, AE W-12

AE-12

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date: 06.05.2016

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarhalli Division, BBMP, Bangalore.
Agency	:	**Technical Manager (west),** KRIDL, Bangalore.
Name of the Work	:	Asphalting of damaged Reaches in Shettyhalli and Mallasandra, in Shettyhalli Ward No.12, SSD, BBMP, Bangalore.
Reference	:	EE/DD/WO/444/2012-13 Dated:08.03.2013
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	06.05.2016

The results of the tests conducted on the Semi Dense bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.31	10.45	9 Kn (min)
2	Marshal flow, mm	2.78	3.64	2 – 4
3	Percent air voids in Mineral Aggregate	13.82	14.77	13 – 15
4	Voids in Compacted Mix	3.63	4.91	3 – 6
5	Percent Voids filled with Bitumen	69.85	70.42	65 - 75
6	Density, g/cc	2.26	2.27	--

Note:

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Ravi. N.K.
AE W-12

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 06.05.2016

BITUMEN CONTENT AND GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 164 & AASHTO T 30

CLIENT	**Executive Engineer,** Dasarhalli Division, BBMP, Bangalore.
AGENCY	**Technical Manager (west),** KRIDL, Bangalore.
NAME OF THE WORK	Asphalting of damaged Reaches in Shettyhalli and Mallasandra, in Shettyhalli Ward No.12, SSD, BBMP, Bangalore.
REFERENCE	EE/DD/WO/444/2012-13 Dated:08.03.2013
DATE OF TESTING	06.05.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	473.5	474
3. Weight of Asphalt and Mineral matter Extracted,	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26.5	26.00
7. Bitumen content in %	5.30	5.20
8. Average	**5.25**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	33.26	7.02	7.02	92.98	90-100
4.75	251.47	53.11	60.13	39.87	35-51
2.36	42.31	8.94	69.07	30.93	24-39
1.18	30.67	6.48	75.55	24.45	15-30
0.3	47.56	10.04	85.59	14.41	9-19
0.075	38.66	8.16	93.76	6.24	3-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	27.14	5.43	5.43	94.57	90-100
4.75	262.31	52.46	57.89	42.11	35-51
2.36	41.28	8.26	66.15	33.85	24-39
1.18	50.74	10.15	76.29	23.71	15-30
0.3	42.77	8.55	84.85	15.15	9-19
0.075	41.23	8.25	93.09	6.91	3-8

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